

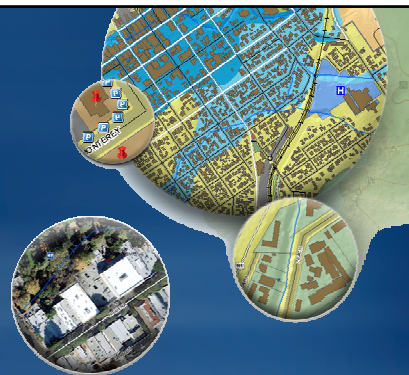
Working with ArcGIS Server: Intro to the JavaScript, Flex, and Silverlight APIs

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ESRI



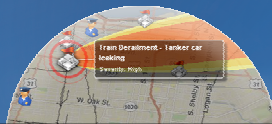
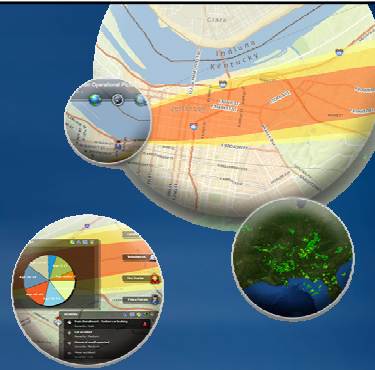
Workshop agenda

- Intro to ArcGIS Server Web APIs
- REST API Services Directory
- API Frameworks
- Capabilities of the ArcGIS Web APIs
- ESRI Sample Viewers for JavaScript and Flex



What makes a great web map?

- Fast
- Easy to use
- Modern looking
- Designed for the end user
- Targeted data layers



Considerations for your Web map

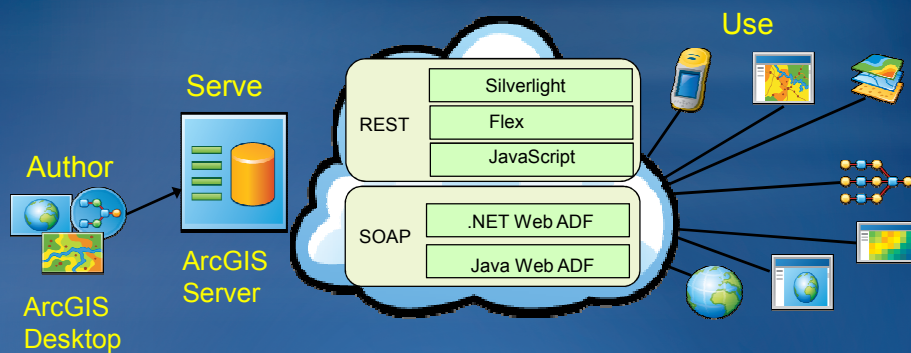
- What is the purpose of the application?
- What business problem will it solve?
- Who are the end users?
- Will this be an internal or public-facing Web site?
- Which data do you need to include?
- What development environment do you prefer?

ArcGIS Server REST API and Services Directory

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ArcGIS Server overview

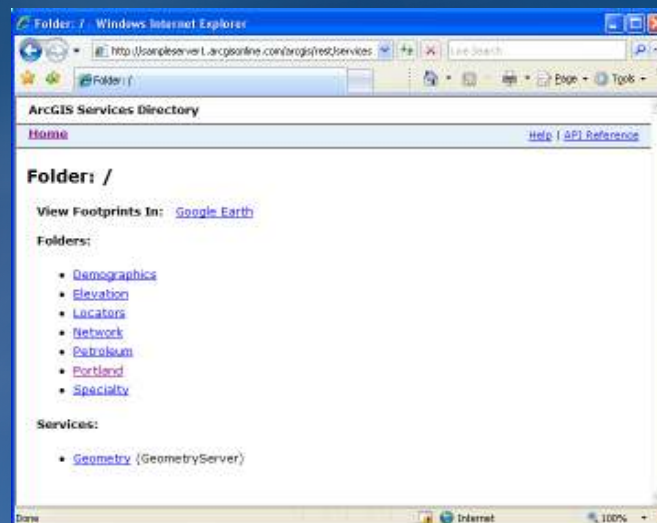
- Author, serve, and use GIS resources
 - Maps, locators, models
- ArcGIS APIs
 - Use REST or SOAP



ArcGIS Server 9.3 REST API

- All GIS services exposed as resources
 - Service-level metadata
- Some resources have operations
 - Map service (export, find, identify)
 - Map service layers (query)
 - Image services (export)
 - Geocode service (findAddressCandidates, Reverse Geocode)
 - Geoprocessing service (execute, submitjob)
 - Geometry service (project, simplify, and others)

ArcGIS Services Directory



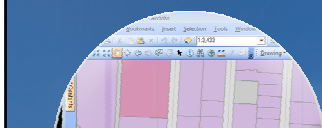
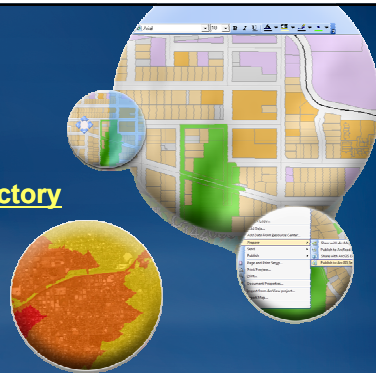
ArcGIS Services Directory

- Discover information about services
- Understand how to use a service with the ArcGIS API for JavaScript
- Get additional information about services
 - Layers in the map, IDs of the layers used for querying
 - Attribute names
 - Spatial reference
- If services are secured, they will require a login
- `http://<server>/<instance>/rest/services`
 - <http://www.example.com/arcgis/rest/services>

Demo

Sample Server on Resource Center

- [sampleserver1 ArcGIS Services Directory](#)



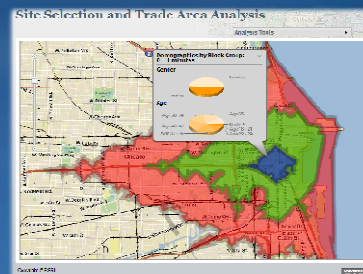
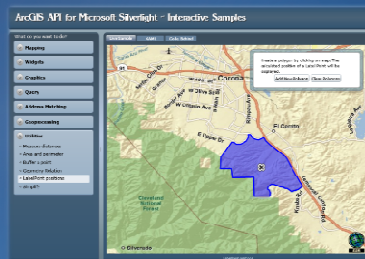
ArcGIS Web APIs

- JavaScript, Flex, Silverlight™
- All free for internal and noncommercial environments
- Utilize ArcGIS Online for data/content or someone else's ArcGIS Server implementation

ArcGIS Web APIs

JavaScript, Flex, Silverlight

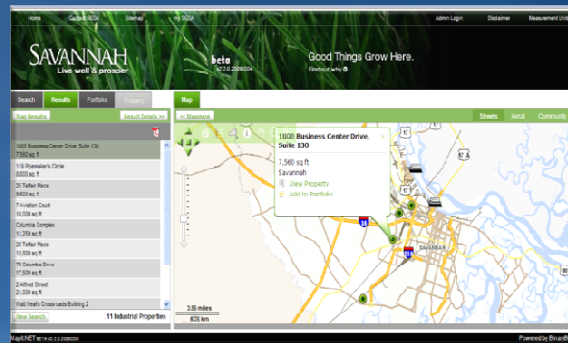
- Embed maps and tasks into your Web application
- All provide common capabilities
- Chose the environment that suits your business needs
- Available at the ArcGIS Resource Center



ArcGIS Web API: JavaScript™

Collection of JavaScript classes

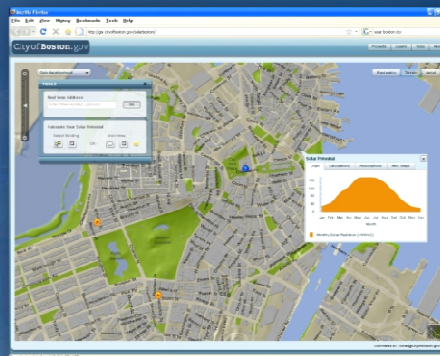
- Does not require Web application server (IIS, Apache/Tomcat)
- Compatible with all Web browsers
- No plug-in
- Develop in a text editor



ArcGIS Web API: Flex™

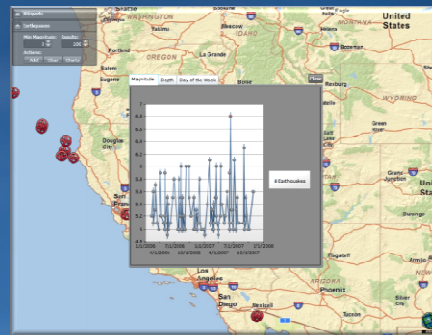
Collection of Action Script classes

- Popular development environment
- Flash Player installed on most computers
- Cross-browser compatibility
- Develop in IDE (Adobe Flex Builder 3)



ArcGIS Web API: Microsoft Silverlight™/WPF™

- Growing in popularity
- Silverlight plug-in included in Windows OS and applications
- Cross-browser compatibility
- Develop in IDE (Visual Studio or Visual Web Developer Express)



ArcGIS Server Resource Center

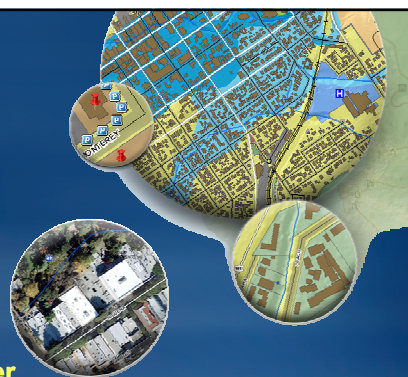
- <http://resources.esri.com/arcgisserver>



Demo

ArcGIS Server Resource Center

- ArcGIS Server Resource Center
- Create an application from a sample
- <http://resources.esri.com/arcgisserver>



ArcGIS Server API Frameworks

ArcGIS API for JavaScript

- **Browser-based API**
- **Makes it easy to embed maps into your Web page**
 - Build applications that mashup your services with:
 - ArcGIS Online, Google Maps, or Bing Maps
- **Powered by ArcGIS Server REST services**
- **Free to use**
 - Provided and hosted by ESRI
 - No development or deployment license required
 - Public access to SDKs from ArcGIS Server Resource Centers
 - Need access to a GIS Server
- **Built on top of Dojo JavaScript Toolkit**
 - Includes complete Dojo Toolkit 1.3.2
 - Strong developer community
 - Powerful framework

ArcGIS API for Flex

- **Browser-based API**
 - Combine Rich Internet Applications with ArcGIS Server Services
 - Applications rendered by Flash Player
- **Powered by ArcGIS Server REST services**
 - Need access to a GIS Server
- **Free to use**
 - Public access to APIs from ArcGIS Server Resource Center
 - Provided and hosted by ESRI
 - No development or deployment license required

Adobe Flex Framework

- **Flex Builder**
 - Eclipse-based development environment
 - Code using an integrated development environment (IDE)
 - Interactive step-through debugging
 - Rich set of components
 - Visual design of the user the interface and behavior

Adobe Flex Framework

- **Plug-in Environment**
 - Flash Player
- **Applications deploy consistently on**
 - All major browsers
 - Desktops
 - Operating Systems
- **Cross-operating system**
 - Application dependent on Flash Player only
- **Strong developer community**
 - <http://www.adobe.com/devnet/flex/>

ArcGIS API for Microsoft Silverlight™/ WPF™

- **Built on Silverlight and WPF (*Windows Presentation Foundation*) Platform**
 - Combine Rich Interactive Applications and ArcGIS Server and Bing Map Services
 - Applications rendered by Microsoft Silverlight plug-in
- **Free to use**
 - No development or deployment license required for non-commercial use
 - Access the online SDK and download the API library at the ArcGIS API for Microsoft Silverlight/WPF Server Resource Center

Microsoft Silverlight Framework

- **Visual Studio or Visual Web Developer Express**
 - Code using an integrated development environment (IDE)
 - Interactive step-through debugging
 - Rich set of components including the Silverlight toolkit
- **Other Silverlight Tools**
 - Expression Blend
 - Deep Zoom Composer

Which ESRI Web mapping API should I choose?

[ArcGIS Server Blog:](#)

ArcGIS Web APIs – what can you do?

JavaScript, Flex, Silverlight

- Create an interactive map of your data
- Execute a Geoprocessing model on the server
- Use ArcGIS Online as a base map
- Search for features or attributes in your GIS data
- Locate addresses
- Visualize results in creative ways
- Create mashups

Maps, layers, and graphics

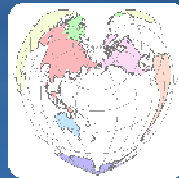
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What is in the ArcGIS Server REST APIs?

- Map Layers
- Graphics
- InfoWindow
- Tasks
 - QueryTask
 - Locator
 - FindTask
 - IdentifyTask
 - Geoprocessor
 - Geometry
 - RouteTask

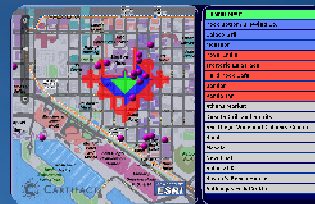
Map has layers

- Tiled (cached) map services
 - ArcGIS Server
 - Bing (Virtual Earth)
- Dynamic Map Services
 - ArcGIS Server
 - Image Services
 - ArcIMS
- Graphics Layer
- Custom layers



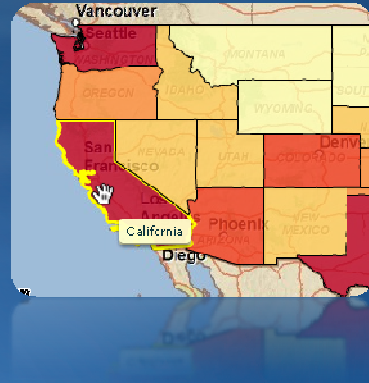
Tasks

- Find Task
 - Search a map service based on a string value
- Query Task
 - Performs a query operation on a specific layer in a map service
- Geometry Task
 - Works with a geometry service resource
 - Project, Simplify, Buffer
- Identify Task
 - Performs an identify operation on layers of a map service resource
- Geocode Task
 - Represents a geocode service resource
 - Geocode (x,y from address),
 - Reverse geocode (address from x,y)
- Geoprocessor Task
 - Works with any GP Task resource



Graphics

- Graphics are geometry + attributes + symbols
- Draw query results as graphics layers
- Rich symbolization
 - Points, Lines, Polygons
 - Pictures
 - TextSymbol, InfoSymbol
- Renderers and Symbols
- Event driven model
 - Mouse, keyboard



Sample viewers for ArcGIS Server

Sample viewers for ArcGIS Server

- Configurable solutions
 - No programming necessary
- Extendable
- Modern-looking
- Available now for JavaScript and Flex APIs
- Strong community of users



...10,000+ downloads!

Configuring the sample viewer

No coding required

- Includes an XML configuration file
- Make changes to the configuration file in a text editor (e.g., Notepad)
 - Point to your data
 - Customize or remove widgets

```
<?xml version="1.0" encoding="UTF-8"?>
<sampleviewer>
  <title>WebMap</title>
  <description>WebMap</description>
  <copyright>Copyright 2009 Esri. All rights reserved.
  <url>http://www.esri.com</url>
  <logo>http://www.esri.com</logo>
  <map>
    <mapid>WebMap</mapid>
    <mapurl>http://server.arcgisonline.com/ArcGIS/rest/services/Louisville/LandBase/MapServer
    <maptype>Dynamic</maptype>
    <mapmode>Dynamic</mapmode>
    <mapurl>http://server.arcgisonline.com/ArcGIS/rest/services/Louisville/LandBase/MapServer
    <maptype>Dynamic</maptype>
    <mapmode>Dynamic</mapmode>
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    <maptype>Dynamic</maptype>
    <mapmode>Dynamic</mapmode>
  </map>
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    </widget>
  </widgets>
</sampleviewer>
```

Extend the sample viewer

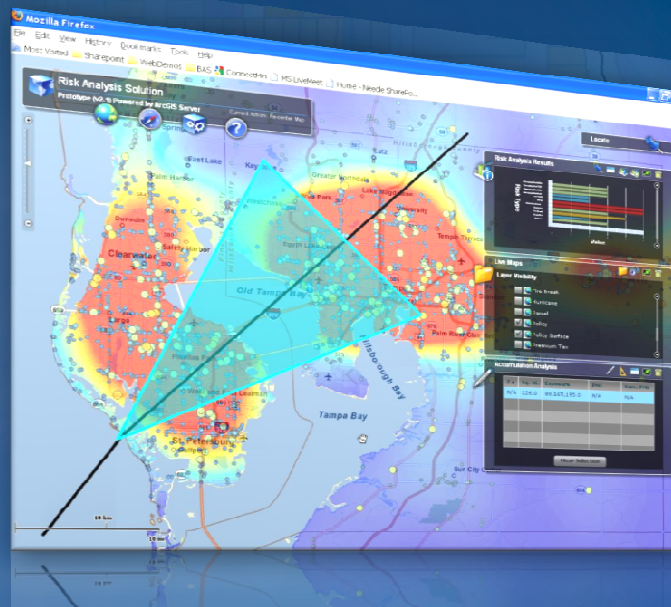
No coding required

- Find additional sample code and widgets at the Resource Center
- Download and add them to your application
 - Same configuration process as sample viewer

[illegible]

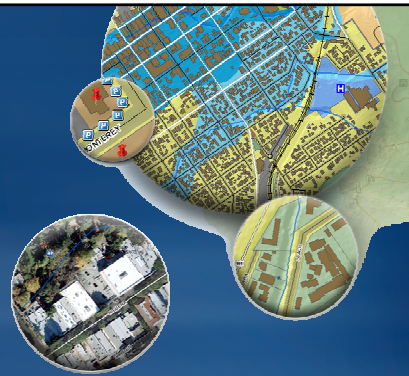
Demonstration

Sample viewers



Summary

- Rich Internet Applications
- Intro to ArcGIS Server Web APIs
- REST API Services Directory
- API Frameworks
- Capabilities of the ArcGIS Web APIs
- ESRI Sample Viewers for JavaScript and Flex



Training options

www.esri.com/training

- Free Web-based training seminars
 - *Building Rich Internet Applications with ArcGIS API for Flex*
 - *Building Mashups using the ArcGIS JavaScript APIs*
 - *Getting Started with ArcGIS API for Microsoft Silverlight*
 - *Authoring and Deploying Fast Web Maps*
 - *Implementing and Optimizing ArcGIS Server Map Caches*
- Instructor-led training courses
 - *Introduction to ArcGIS Server*
 - *ArcGIS Server: Web Administration Using the Microsoft .NET Framework*
 - *Building Web Maps Using the ArcGIS API for JavaScript*

Thanks for your attention!

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